

## **CLAIMS**

1. Display device, that comprises:

- a light source (630) adapted to light up, by back lighting, a display surface (610, 620),
- a means of modulation (640) of at least one physical characteristic of the said light

source and

- in the display surface, at least two filters (612 to 614 and 622 to 624) corresponding, to a value of physical characteristic modulated by the means of modulation and to a message to be displayed on said display surface, said filters being placed on an optical path followed by light rays coming from the light source, the messages being independent and overlapping, at least partially, in the display surface.

2. Device according to claim 1, wherein at least two of said filters are superimposed (612 to 614 and 622 to 624) in the display surface.

3. Device according to any one of claims 1 or 2, wherein at least two of said filters, each of an assembly of filters (1112, 1114, 1122, 1124, 1162, 1163, 1164, 1172, 1173, 1174), other assemblies being juxtaposed alternatively in the display surface.

4. Device according to any one of claims 1 to 3, wherein it comprises at least one contactor (616, 626) adapted to provide a signal representing the interaction between a user and at least a part of the display surface.

5. Device according to claim 4, wherein it comprises a plurality of keys (610, 620) comprising a so-called contactor (616, 626) and each bearing a part of said display surface and a part of each of said filters.

6. Display device according to any one of claims 1 to 5, wherein the modulation means (640) is adapted to modify the spectral band of light reaching said filters (612 to 614 and 622 to 624) and said filters provide spectral bands of different transparency.

7. Display device according to any one of claims 1 to 6, wherein the light source (630) comprises a light-emitting diode whose spectral band of emission varies according to the electrical characteristics of the power signal that is applied to it and the modulation means is adapted to modify said electrical characteristics

8. Display device according to any one of claims 1 to 7, wherein the light source comprises at least two independent electro-optical transducers (130, 132, 230, 232, 330, 332, 430, 432, 530, 532) placed in parallel on an optical path of light rays coming from the light source and going to the display surface, the modulation means (140, 240, 340, 440, 540) being adapted to control

1 alternately the light emission by one or other of the electro-optical transducers.

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3       9.     Display device according to any one of claims 1 to 8, wherein the modulation means  
4 (240) is adapted to modify a principal axis of polarization of the light rays reaching the filters (212, 214,  
5 222, 224) and the filters present different transparencies according to the axes of polarization.

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7       10.    Display device according to any one of claims 1 to 9, wherein the filters (412, 414,  
8 416) comprise components adapted to producing constructive or destructive interferences depending  
9 on the angle of incidence of the light rays and the modulation means (440) is adapted to modify the  
10 angle of incidence of the light rays emitted by the light source (430, 432).

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12       11.    Display device according to any one of claims 1 to 10, wherein the filters (712, 714,  
13 722, 724) comprise holograms and the light source comprises at least two electro-optical transducers  
14 (730 to 736) adapted to light up said holograms with different angles of incidence in order to make  
15 different symbols or messages appear on the display surface, the modulation means being adapted to  
16 modify the angle of incidence of the light rays emitted by the light source.

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18       12.    Display device according to any one of claims 1 to 11, wherein the filters (412, 414,  
19 416) comprise components adapted to produce total or partial reflections depending on the angle of  
20 incidence of the light rays and the light source (430, 432) comprises at least two electro-optical  
21 transducers adapted to light up said filters with different angles of incidence in order to make different  
22 symbols or messages appear on the display surface, the modulation means being adapted to modify  
23 the angle of incidence of the light rays emitted by the light source.

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25       13.    Display device according to any one of claims 1 to 12, wherein the filters (712, 714,  
26 722, 724) comprise components adapted to realize different light transfers depending on the angle of  
27 incidence of the light rays and the light source comprises at least two electro-optical transducers (730,  
28 732, 734, 736) adapted to light up said filters with different angles of incidence in order to make  
29 different symbols or messages appear on the display surface, the modulation means being adapted to  
30 modify the angle of incidence of the light rays emitted by the light source.

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32       14.    Display device according to any one of claims 1 to 13, wherein the optical path going  
33 from the light source to the display surface comprises at least one optical fiber (734, 736).

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35       15.    Display device according to any one of claims 1 to 14, wherein the optical path going  
36 from the light source to the display surface comprises at least one optical reflector element.

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38       16.    Display device according to any one of claims 1 to 15, wherein it comprises a means  
39 of reception (850) of signals from a keyboard whose keys comprise display surfaces, signals  
40 representing keyboard keys activated by the user, the means of reception being adapted to assign

1 different symbols to said signals, according to the switching performed by the switching means (840).

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3       17. Device according to any one of claims 1 to 16, wherein, at least one of said filters  
4 consists of an ink deposited with a marker on a transparent support.

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6       18. Device according to any one of claims 1 to 17, wherein one of said filters (1705, 1706)  
7 is borne on the front face of said display surface (1700).

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9       19. Device chosen between a personal digital assistant, an organizer, a telephone, a  
10 games console, a portable computer, an Internet access terminal, an Automatic Teller Machine, a  
11 dashboard, a watch, a remote control, a portable music player, a positioning system and an  
12 audiovisual signal receiver, office or leisure electronic equipment, a facsimile machine, a photocopier,  
13 a scanner, a recorded music reader, a home system installation, a household appliance, medical  
14 equipment, a measurement device, an automated analysis device, automobile equipment, a  
15 signboard, a switch, a games system, a decorative element, a lamp, an electrical button and/or a  
16 display panel, wherein it comprises a display device, according to any one of claims 1 to 18.

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18       20. Display method, wherein it comprises:

19           - a step of switching a light source adapted to light up, by backlighting, at least  
20 one display surface:

21           - a step of modulating at least one physical characteristic of the light source, the  
22 display surface being provided with at least two filters (612 to 614 and 622 to 624) corresponding,  
23 each, to a value of physical characteristic modulated by the means of modulation and to a message to  
24 be displayed on said display surface, said filters being placed on an optical path followed by light rays  
25 coming from the light source, the messages overlapping at least partially in the display surface.

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